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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional): 8824/ETCH/DRIE

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on July 1, 2008

Signature / Alan Taboada /

Typed or printed name Alan Taboada

Application Number	Filed
10/823,371	04/12/04

First Named Inventor: Shannon, et al.

Art Unit	Examiner
1792	Arancibia, Maureen G.

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

I am the

- ☐ applicant/inventor.
- ☐ assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)
- ☐ attorney or agent of record. Registration number _____.
- ☒ attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 51,359

/ Alan Taboada /
Signature

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Typed or printed name

(732) 935-7100
Telephone number

July 1, 2008
Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☐ *Total of _____ forms are submitted.

IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE

Appellant: **Shannon, et al.**
Serial No.: **10/823,371**
Examiner: **Arancibia, Maureen G.**
Confirmation No.: **4850**

Case: **8824/ETCH/DRIE**
Filed: **April 12, 2004**
Group Art Unit: **1792**

Title: **DUAL FREQUENCY RF MATCH**

Mail Stop AF
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P.O. Box 1450
Alexandria, VA 22313-1450

S I R:

REMARKS ACCOMPANYING PRE-APPEAL BRIEF REQUEST FOR REVIEW

In response to the Advisory Action dated June 25, 2008, please consider this Pre-Appeal Brief Request for Review, submitted together with a Notice of Appeal, to review the clear errors of fact and law by the Examiner with respect to presently rejected claims 1, 3-10 and 12-21 under 35 USC §103(a) as being unpatentable over Japanese Patent Application Publication No. 08-097199A to *Nishiyama, et al.* (hereinafter *Nishiyama*) in view of Japanese Patent Application Publication No. 06-243992, published September 2, 1994 to *Deguchi, et al.* (hereinafter *Deguchi*).

Independent claims 1, 9, 10, and 19 each recite limitations not taught or suggested by any permissible combination of *Nishiyma* and *Deguchi*. Specifically, independent claims 1, 9, 10, and 19, recite, in combination with other limitations, an apparatus for matching the impedance of a pair of RF sources coupled to a single electrode to the impedance of a plasma in a semiconductor substrate processing chamber comprising a first sub-circuit... and a second sub-circuit... wherein a first match tune space defined by the first sub-circuit can be varied without affecting a second match tune space defined by the second sub-circuit.

Nishiyama generally teaches a method for forming an insulation layer using a plasma enhanced chemical vapor deposition apparatus. (See, *Nishiyama*, English Machine Translation (EMT), pg. 1, ¶ [0001].) With respect to the apparatus, *Nishiyama*

discloses a counterelectrode 15 that is equipped with RF generators 16 and 17 of two variable frequencies through two independent matching networks 18 and 19, respectively. (*Id.* at ¶ [0012].) However, and as admitted by the Examiner, *Nishiyama* fails to teach or suggest, an apparatus for matching the impedance of a pair of RF sources wherein a first match tune space defined by a first sub-circuit can be varied without affecting a second match tune space defined by a second sub-circuit, as recited in claims 1, 9, 10, and 19.

Deguchi teaches a plasma processing device having a matching part 14 and an RF electric power supply part 12 in which the impedance is matched by changing an oscillation frequency of output electric power on the side of the RF electric power supply part 12. *Deguchi*, discloses only one RF signal for one matching part and is devoid of any teaching or suggestion regarding the matching of multiple RF signals fed to a single electrode. Specifically, *Deguchi* also fails to teach or suggest an apparatus for matching the impedance of a pair of RF sources coupled to a single electrode to the impedance of a plasma in a semiconductor substrate processing chamber wherein a first match tune space defined by the first sub-circuit can be varied without affecting a second match tune space defined by the second sub-circuit, as recited in independent claims 1, 9, 10, and 19.

Therefore, *Deguchi* fails to teach or suggest a modification of *Nishiyama* that would yield an apparatus for matching the impedance of a pair of RF sources wherein a first match tune space defined by a first sub-circuit can be varied without affecting a second match tune space defined by a second sub-circuit, as recited in claims 1, 9, 10, and 19. Thus, a *prima facie* case of obviousness has not been established as the combination of the cited art fails to yield the limitations recited in the claims.

However, regardless of the above, the Examiner asserts that the apparatus taught by the combination of *Nishiyama* and *Deguchi* would meet "all of the structural limitations of the claimed invention" and would inherently be "structurally capable of performing the intended use of allowing the first match tune space defined by the first sub-circuit to be varied without substantially affecting the second match tune space defined by the second sub-circuit, by varying the shunt capacitors." (Final *Office Action*, p. 4-5.) The Examiner supports her assertion by stating that the combination of

Nishiyama and *Deguchi* would inherently be structurally capable of performing the function recited in the claims of allowing the first match tune space defined by the first sub-circuit to be varied without affecting the second match tune space defined by the second sub-circuit "by varying the variable shunt capacitor." (*Final Office Action*, p. 9, emphasis added by the Examiner.)

The Appellants strongly disagree and believe that the Examiner is making a clear error of fact and law with respect to this assertion.

Specifically, the Appellants note that neither *Nishiyama* nor *Deguchi* teach or suggest an apparatus that allows "the first match tune space defined by the first sub-circuit to be varied without substantially affecting the second match tune space defined by the second sub-circuit, by varying the shunt capacitors," as asserted by the Examiner. The Examiner appears to acknowledge this and relies solely upon the Appellants' own disclosure to support her assertion of inherent structural capability.

However, neither the cited art nor Appellants' specification teaches that varying the variable shunt capacitor will allow the first match tune space defined by the first sub-circuit to be varied without affecting the second match tune space defined by the second sub-circuit in any match circuit. The cited art is completely devoid of any such teaching. The Appellants' specification discloses how the Appellants' invention works, and not how some proposed modification of the prior art might work. As such, the Examiner is making a clear error of fact in presuming that the Appellants' specification supports her position that the combined apparatus of *Nishiyama* and *Deguchi* would be inherently structurally capable of meeting the limitations recited in the claims.

Moreover, "[i]n relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." MPEP §2112 IV, citing *Ex parte Levy,* 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original).

Here, the Examiner has provided no evidence or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. Firstly, there is no teaching or suggestion in the prior art that the structure taught by the combination of *Nishiyama*

and *Deguchi* would be structurally capable of meeting the limitations recited in the claims (inherently or otherwise). Instead, the Examiner solely relies upon paragraphs 20 and 21 of the present application to provide the reasoning for her assertion. (*Final Office Action*, p. 9.) However, as noted above, the Appellants' own teachings with respect to the operation of the presently claimed invention does not show how the combination of *Nishiyama* and *Deguchi* may operate. Specifically, the present application discusses the benefits of the present invention and not of any alleged combinations of other match circuits. As such, the operation of the present invention sheds little light on what would happen were one to combine the cited art in the manner asserted by the Examiner, then operate it in a manner as discussed in the present application.

Moreover, even though the Examiner has not properly supported her assertion of inherency, the Appellants have provided a Declaration of inventor Steven S. Shannon, filed September 27, 2007, discussed in detail in the Office Action responses submitted September 16, 2007 (pp. 10-11), January 10, 2008 (pp. 11-14), and June 6, 2008 (pp. 10-12), which shows that fixed series elements and variable shunt capacitors of a dual frequency match circuit do <u>not</u> necessarily provide respective tune space independence. For example, paragraph 10 of the declaration shows, in part, that a match circuit having fixed series components and a variable shunt to ground does result in a tune space shift when varying the shunt capacitor. Thus, contrary to the Examiner's inherency argument, the combination of the cited art will not necessarily produce the allegedly inherent characteristic, and thus, fails to meet the requirements for relying upon a theory of inherency. As such, modifying *Nishiyama* with the teachings of *Deguchi*, fails to yield a dual frequency match circuit having tune space independence for the respective tuning circuits for each frequency signal. Thus, a *prima facie* case of obviousness has not been established as the combination of the cited art fails to yield the limitations recited in the claims.

In summary, the Appellants respectfully request removal of the present rejections clearly erroneously based upon a theory of inherent structural capability, where no evidence has been shown that the combination of the cited art will necessarily be structurally capable of meeting the limitations recited in the present claims. As the

teachings of *Nishiyama* and *Deguchi* fail to teach, suggest, or otherwise reveal an apparatus that would be structurally capable of meeting the limitations recited in the claims, and as the Declaration of Steven C. Shannon further reveals that the structure of the match circuit requires more than just fixed series components and variable shunts to ground in order to be structurally capable of meeting the limitations recited in the claims, it is clear that the alleged combination of *Nishiyama* and *Deguchi* fail to inherently be structurally capable of meeting the limitations recited in the claims.

Therefore, as all rejections in the Final Office Action have been overcome, the Appellants respectfully request that all presently pending claims be allowed. Accordingly, both reconsideration of this application and its swift passage to issuance are earnestly solicited. If, however, the Examiners believe that there are any unresolved issues in the application, it is requested that the Examiners telephone Mr. Alan Taboada at (732) 935-7100 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

July 1, 2008

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